

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
3 March 2005 (03.03.2005)

PCT

(10) International Publication Number
WO 2005/019697 A1

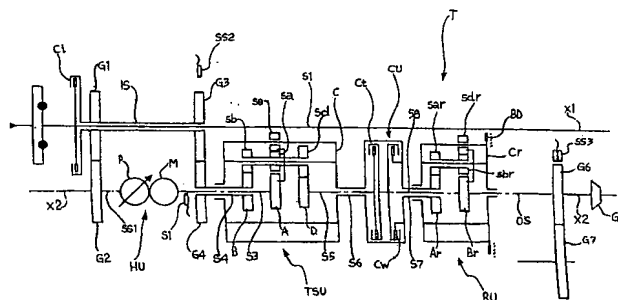
- (51) International Patent Classification⁷: **F16H 47/04**, 57/02, B60K 17/28, 17/10
- (21) International Application Number: PCT/EP2004/009120
- (22) International Filing Date: 13 August 2004 (13.08.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: TO2003 A 000649 22 August 2003 (22.08.2003) IT
- (71) Applicant (for all designated States except US): **SAME DEUTZ-FAHR GROUP S.p.A** [IT/IT]; Viale F. Cassani, 14, I-24047 Treviglio (IT).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **RIPAMONTI, Angelo** [IT/IT]; Viale F. Cassani, 15, I-24047 Treviglio (IT). **RIVOLTELLA, Giovanni** [IT/IT]; Viale F. Cassani, 15, I-24047 Treviglio (IT).
- (74) Agents: **QUINTERNO, Giuseppe** et al.; Jacobacci & Partners SPA, Corso Regio Parco, 27, I-10152 Torino (IT).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS,

[Continued on next page]

(54) Title: **HYDROMECHANICAL TRANSMISSION FOR AGRICULTURAL TRACTORS**



(57) Abstract: The transmission comprises: an input shaft (IS) which can be coupled to a prime mover of the tractor and extends along a first direction (x1) aligned with the shaft of the prime mover and with a shaft (S1) of the power take-off of the tractor; an output shaft (OS); a hydrostatic unit (HU) including a pump (P) driven by the prime mover shaft and a motor (M) driven by the pump (P), wherein the pump and motor are positioned in line along a second direction (x2) spaced transversely downwards from the first direction (x1); an epicyclic torque splitter unit (TSU), positioned in line with the hydrostatic unit (HU) and including a first and a second input shaft (S3, S4), coupled to the motor (M) of the hydrostatic unit (HU) and to the prime mover, respectively, and at least a first and a second output shaft (S5, S6), the rotational speeds of the first and second output shafts (S5, S6) varying, respectively, in a first and a second range (VD1-VD2, VC1-VC2; VD1-VD2, VB1-VB2) adjacent to each other, at high speed and low speed respectively, as the rotational speed of the first input shaft (S3) varies between a maximum value (rpmA; rpmC) and a minimum value (-rpmA; -rpmC); a clutch unit (CU), positioned in line with the hydrostatic unit (HU) and with the torque splitter unit (TSU) and arranged to couple the output shaft (OS) of the transmission selectively to the first or second output shaft (S5, S6) of the torque splitter unit (TSU), in such a way as to provide a pair of forward operating ranges ("transport" and "work"), at high and low speed respectively; and a reversing unit (RU) positioned in line with the hydrostatic unit (HU) the torque splitter unit (TSU) and the clutch unit (CU), and arranged to provide a reverse operating range ("reverse").

WO 2005/019697 A1



JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— of inventorship (Rule 4.17(iv)) for US only

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.